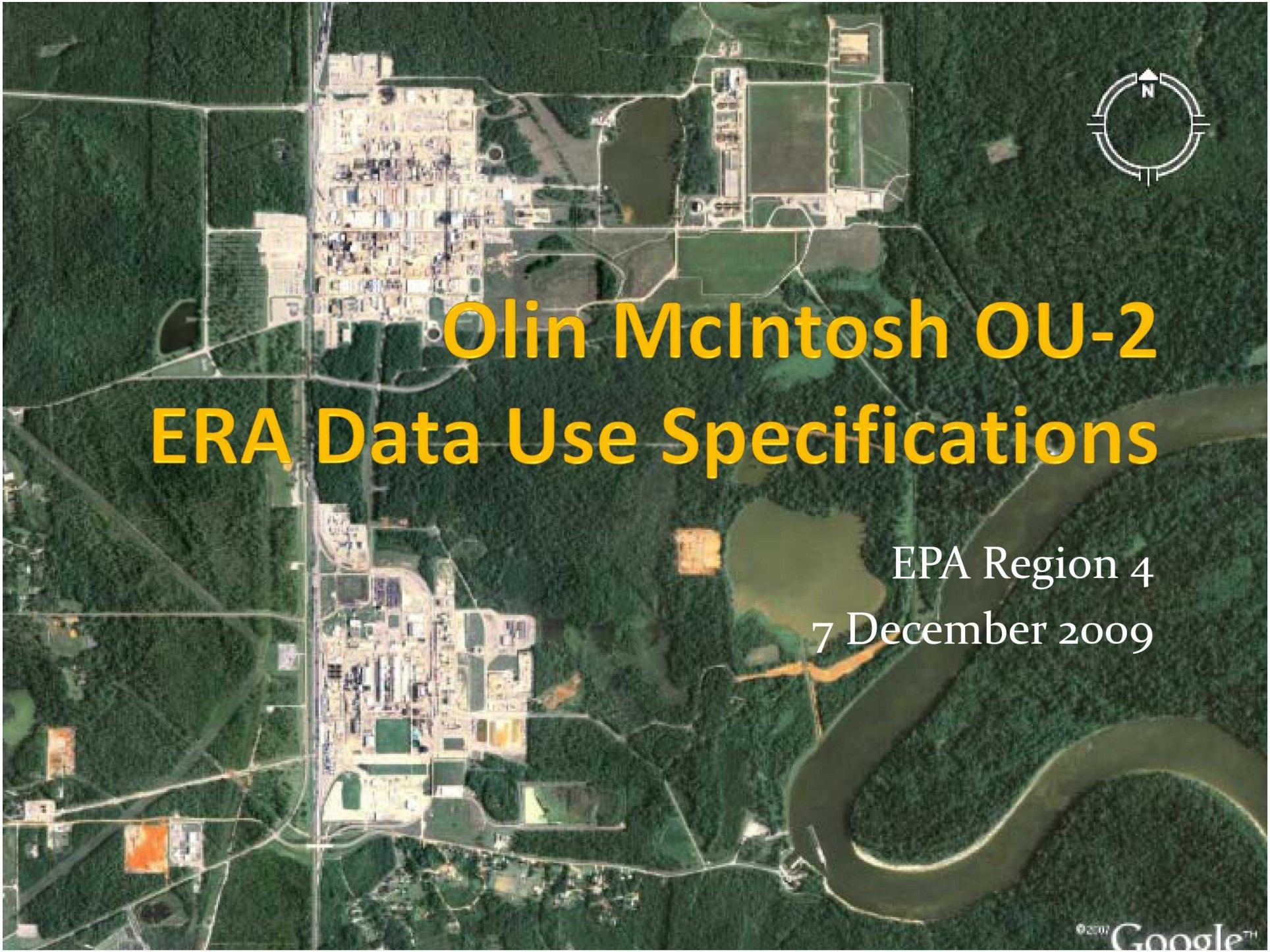


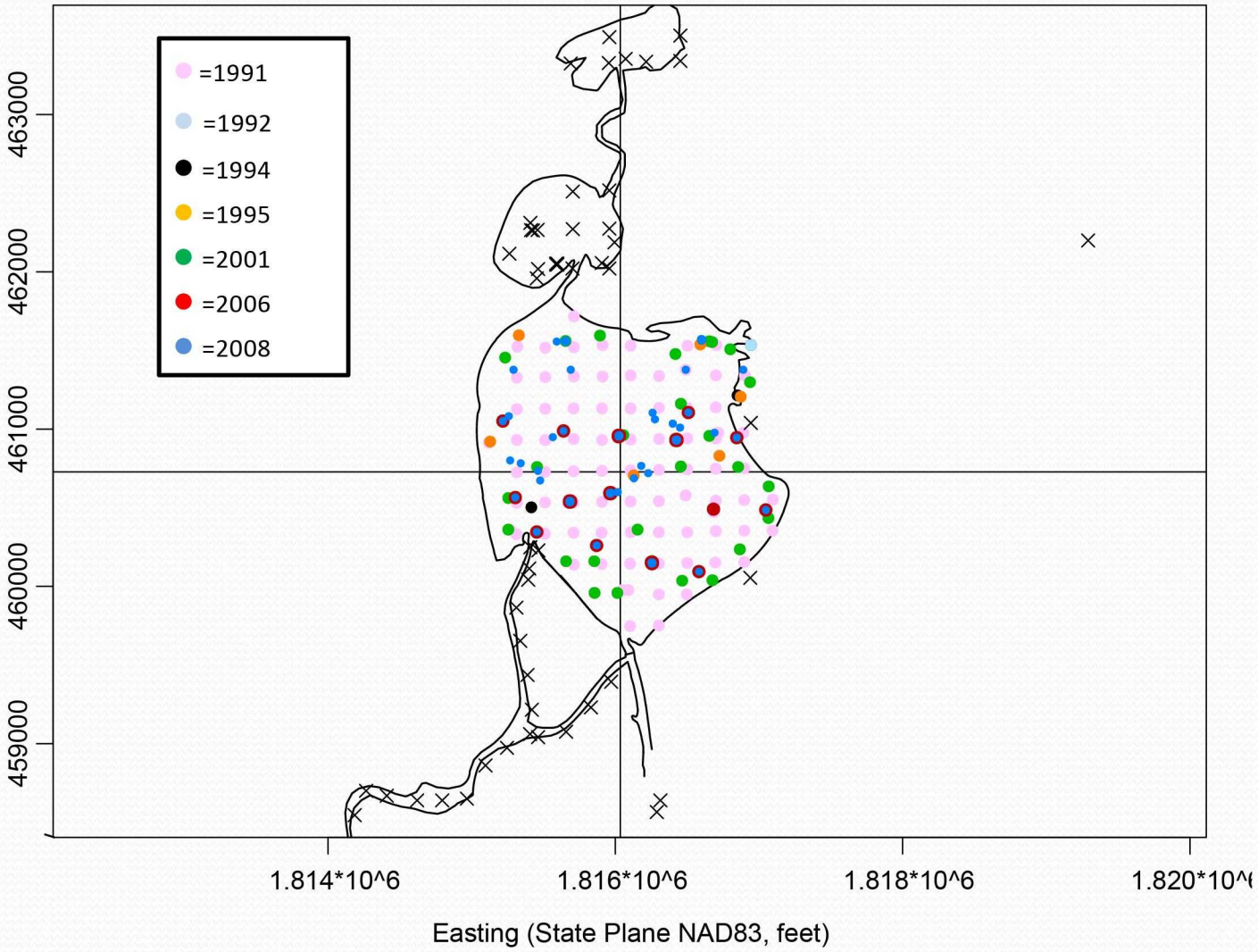
Olin McIntosh OU-2
ERA Data Use Specifications

EPA Region 4

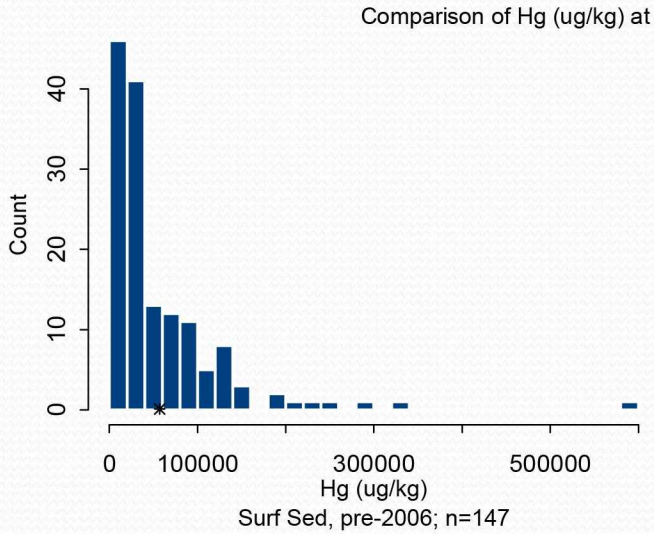
7 December 2009

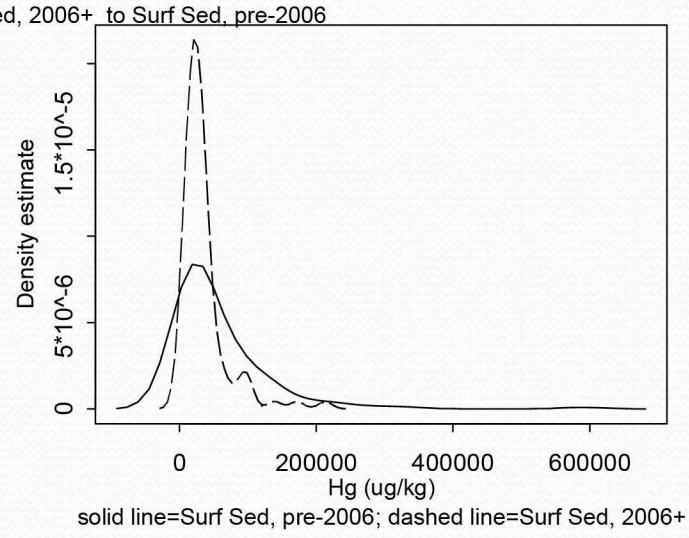
Data Use Specifications for Mercury and Methylmercury

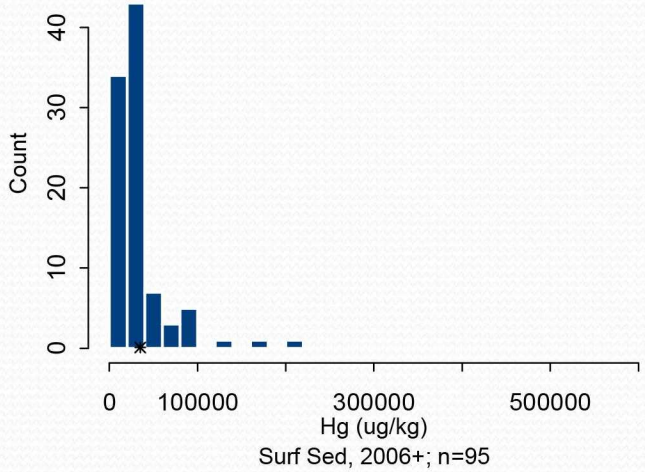
Basin Sediment Hg Samples By Year

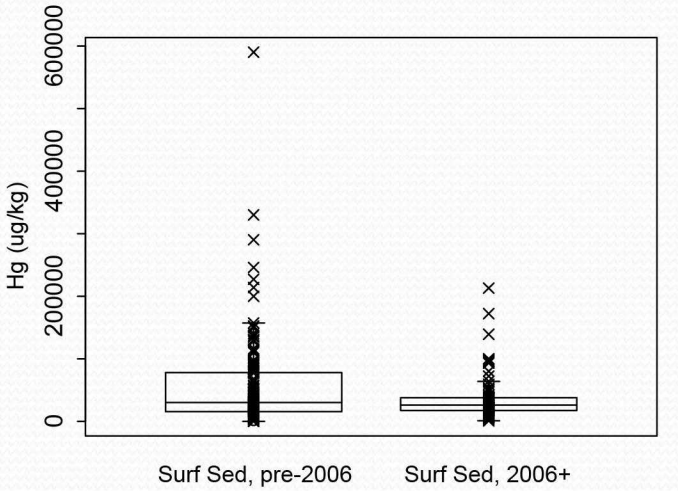


Comparison of Total Hg in Surface Sediment Pre-2006 vs 2006 and Later

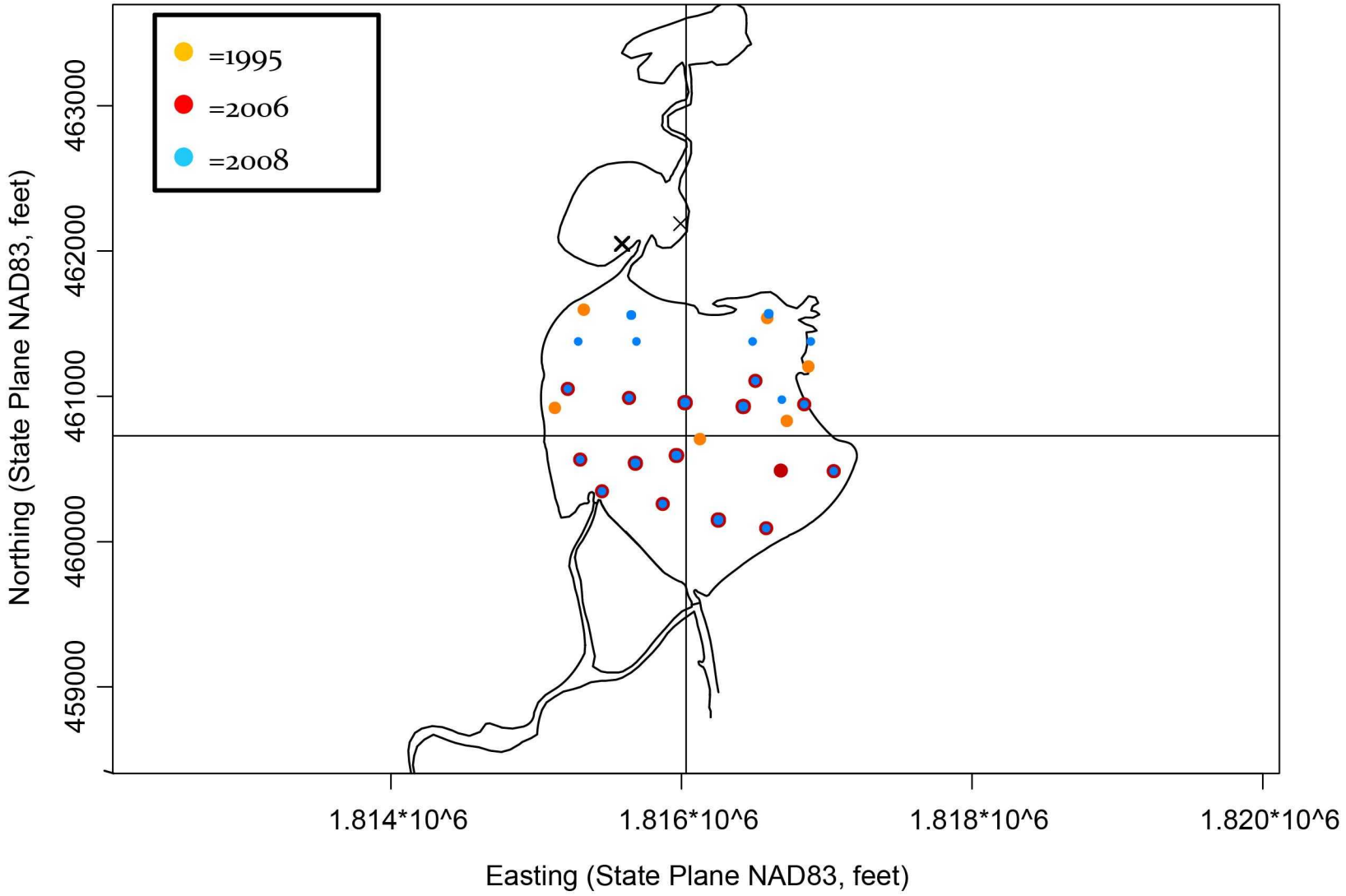




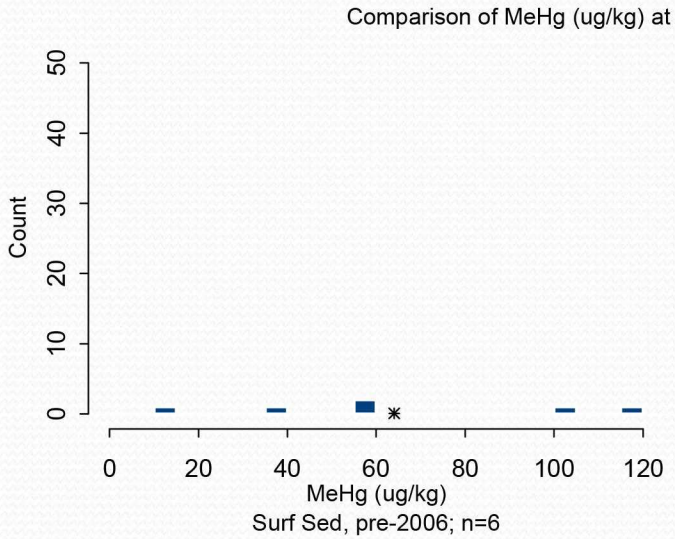


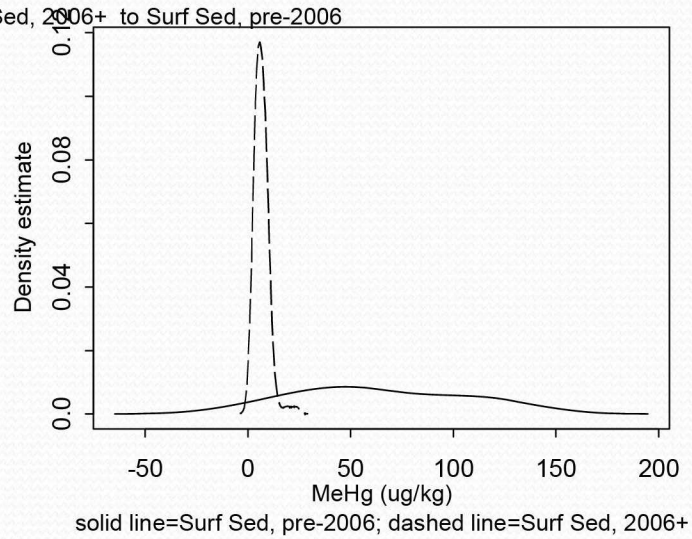


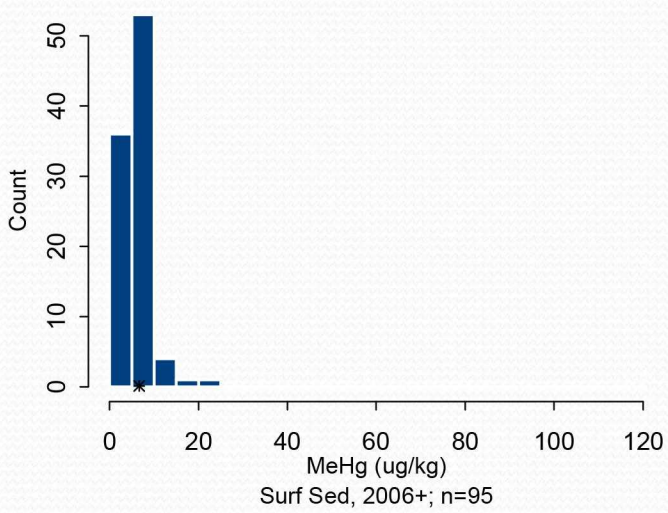
Basin Sediment MeHg Samples By Year

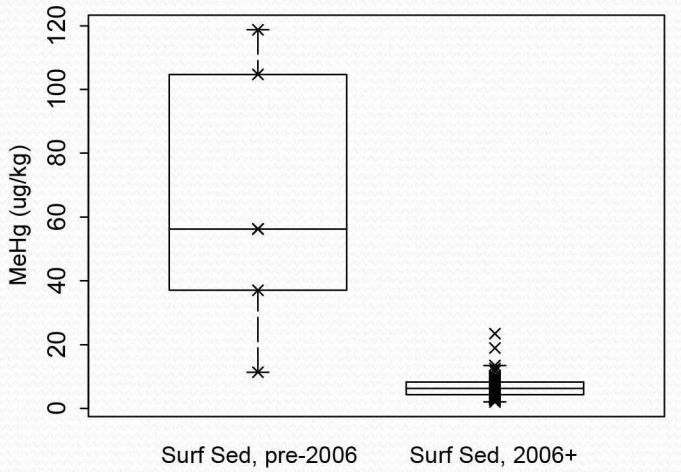


Comparison of MeHg in Surface Sediment Pre-2006 vs 2006 and Later

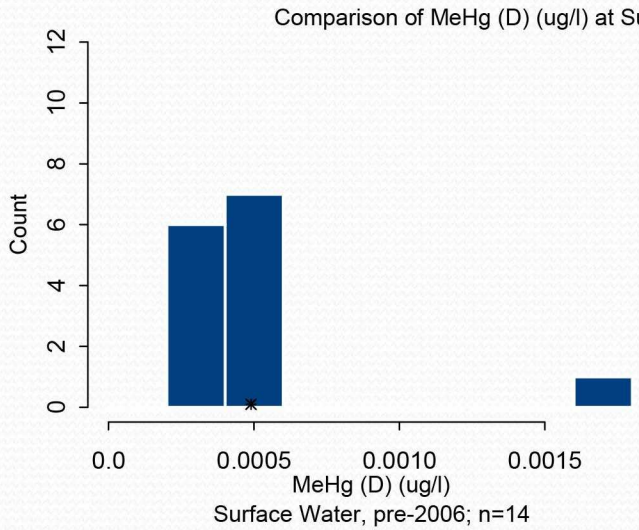


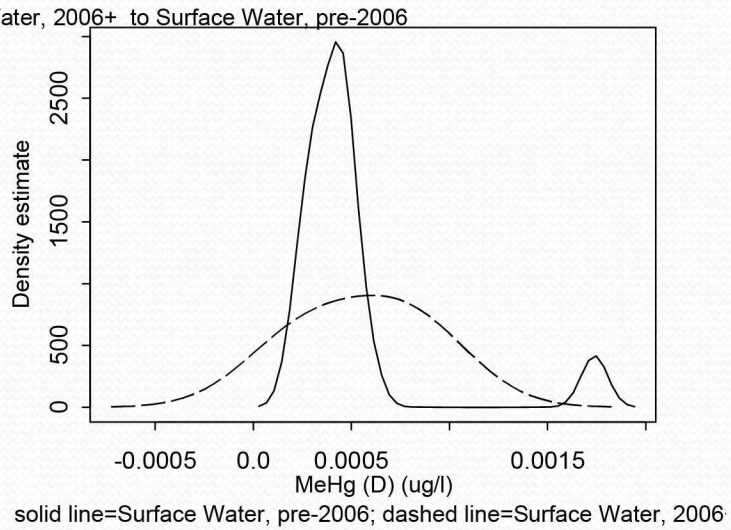


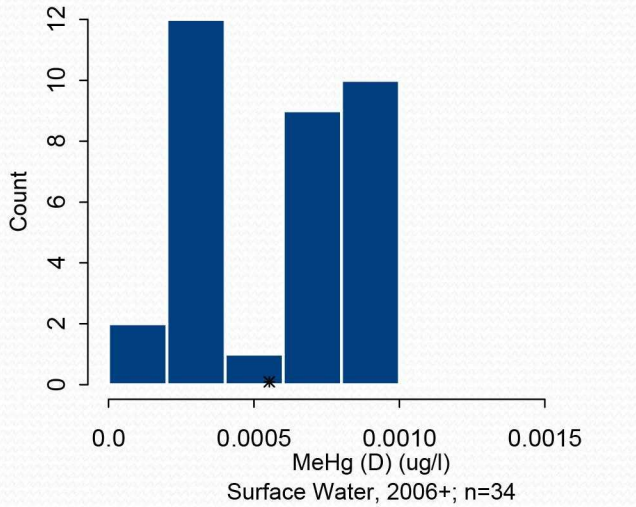


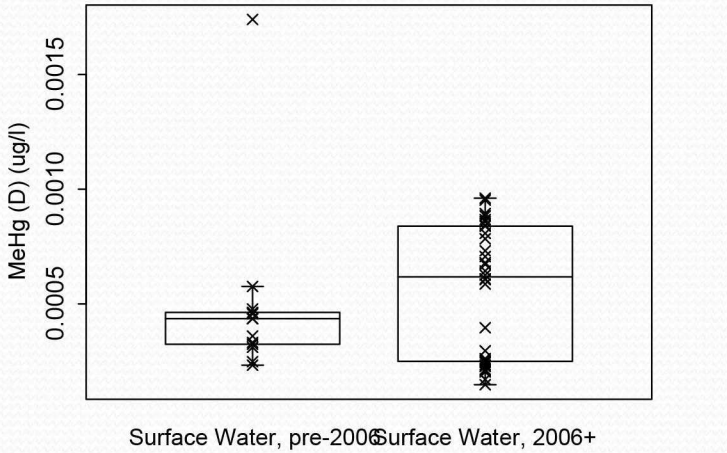


Comparison of MeHg in Filtered Surface Water Pre-2006 vs 2006 and Later

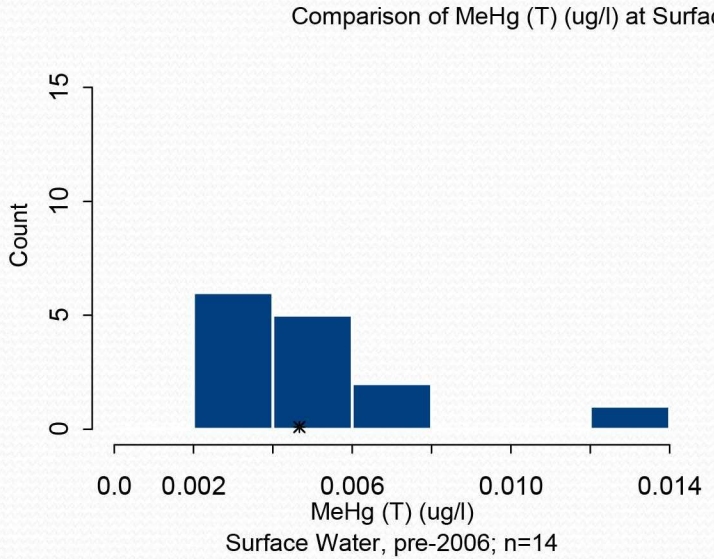


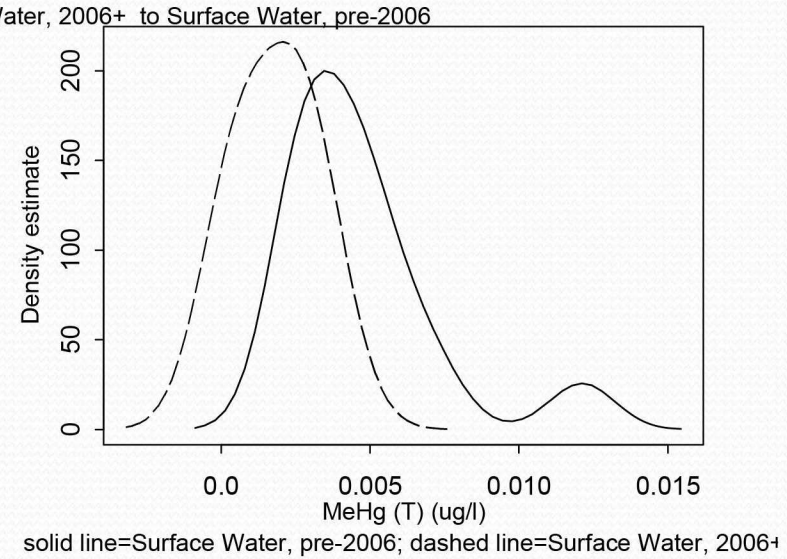


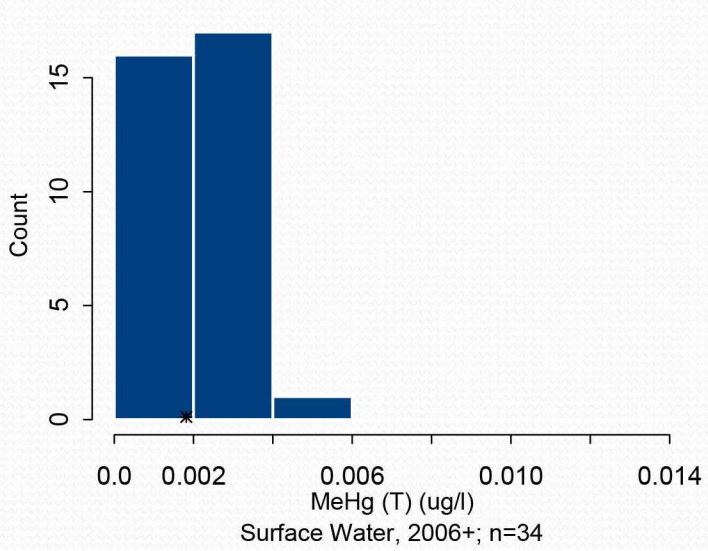


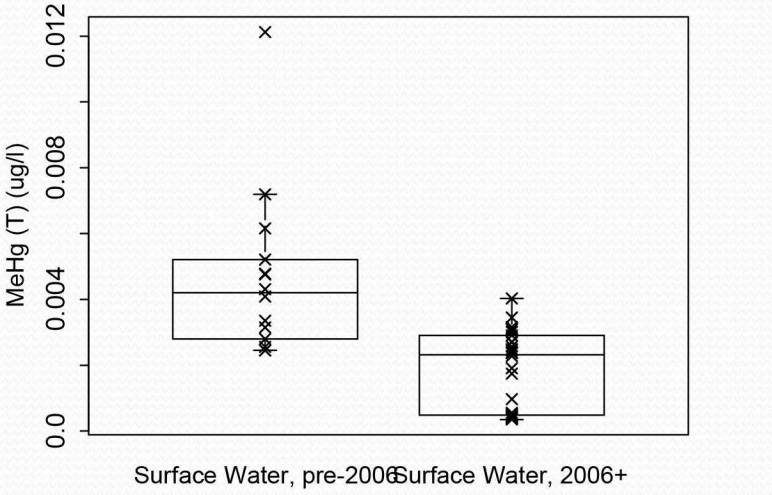


Comparison of MeHg in Unfiltered Surface Water Pre-2006 vs 2006 and Later

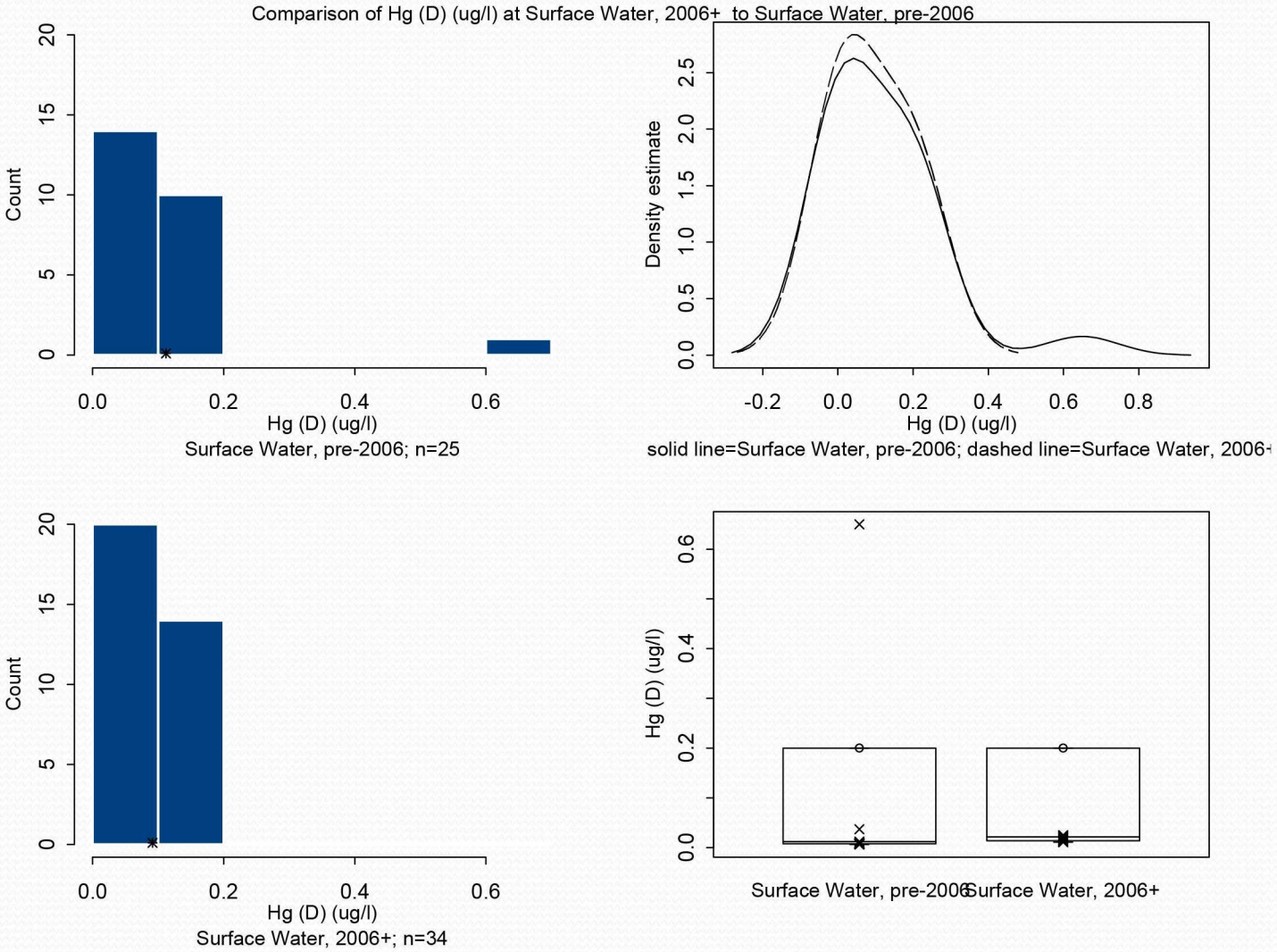




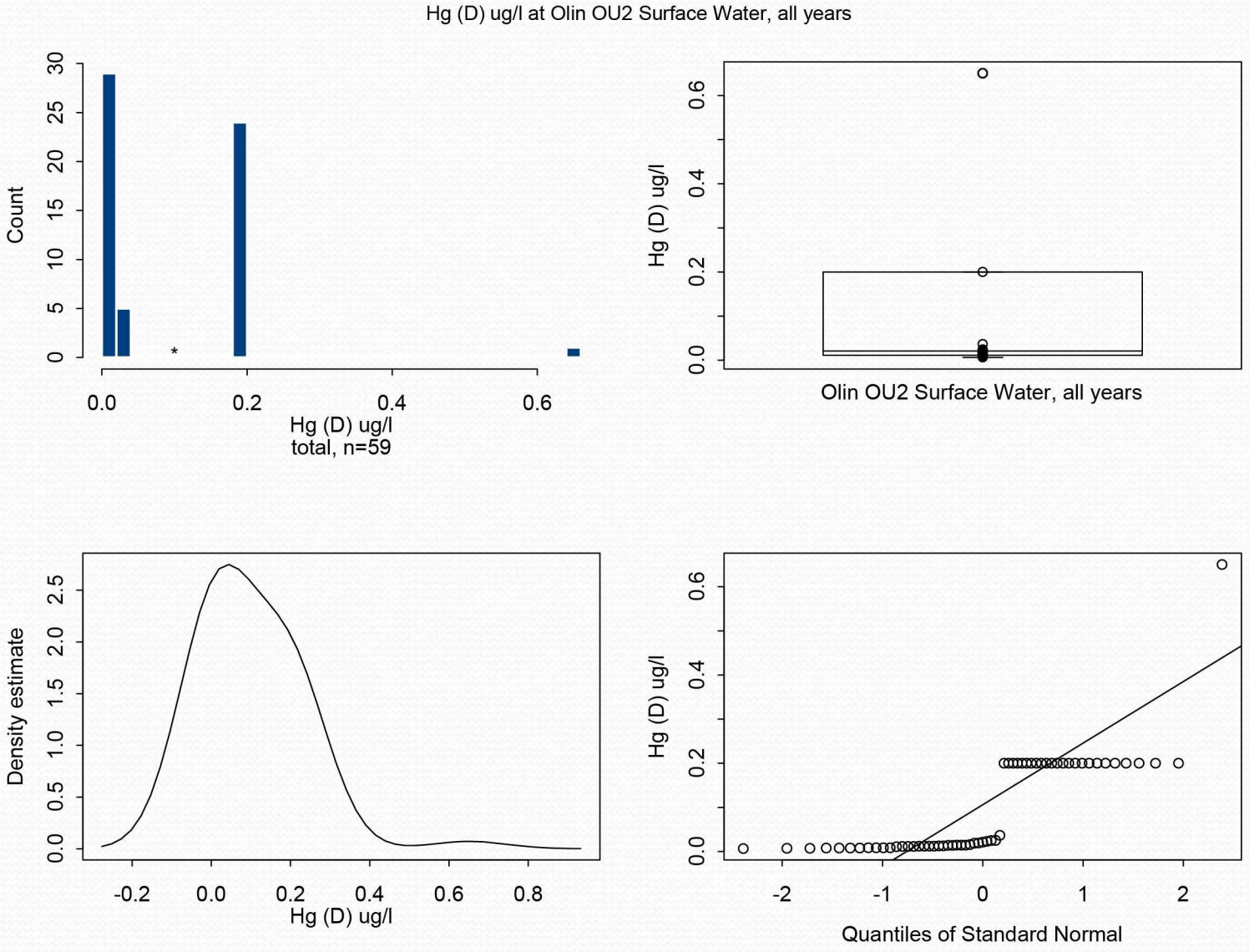




Comparison of Total Hg in Filtered Surface Water Pre-2006 vs 2006 and Later



Total Hg in Filtered Surface Water
All Years Combined



Mercury Data Use Specifications for Sediment and Surface Water

- Sediment: EPA recommends the use of Surface Sediment data evaluated two ways:
  - sediment collected in 2008/2009* ESPP only
  - sediment collected in All Years combined.
- Surface Water: EPA recommends the use of Surface water data evaluated two ways:
  - surface water collected in 2008/2009* ESPP only, and
  - surface water collected in All Years except 2006 combined.
    - 2006 data should be omitted from the "all years combined" data set due to inadequate detection limits for total mercury.

Mercury Data Use Specifications for Plants

- Terrestrial Plant Data: EPA recommends that plant concentrations be estimated by multiplying Wetland Soil Concentrations * Plant BAF from Zagury et.al 2006. If the uncertainty in this approach is not acceptable, an alternative is to collect wetland plant samples from the floodplain
- Aquatic Plant Data: EPA recommends that plant concentrations be estimated by multiplying Sediment Concentrations * Plant BAF from Molisani et.al 2006
- Terrestrial Invertebrate Data: EPA recommends the use of Terrestrial Insect data collected in 1994 and spider data collected in 1995/1996. These data represent the most recent data set available for terrestrial invertebrates in Olin OU-2.

Mercury Data Use Specifications for Invertebrates

- Terrestrial Invertebrate Data: EPA recommends the use of Terrestrial Insect data collected in 1994 and spider data collected in 1995/1996. These data represent the most recent data set available for terrestrial invertebrates in Olin OU-2.
- Aquatic Insect Data: EPA recommends the use of Aquatic Insect data collected in 1994 and 2001. These data represent the two most recent data sets available for aquatic invertebrates in Olin OU-2.
- Crayfish: EPA recommends the use of Crayfish data collected in 1994, which are the only crustacean data collected in Olin OU-2.

Mercury Data Use Specifications for Amphibians and Fish

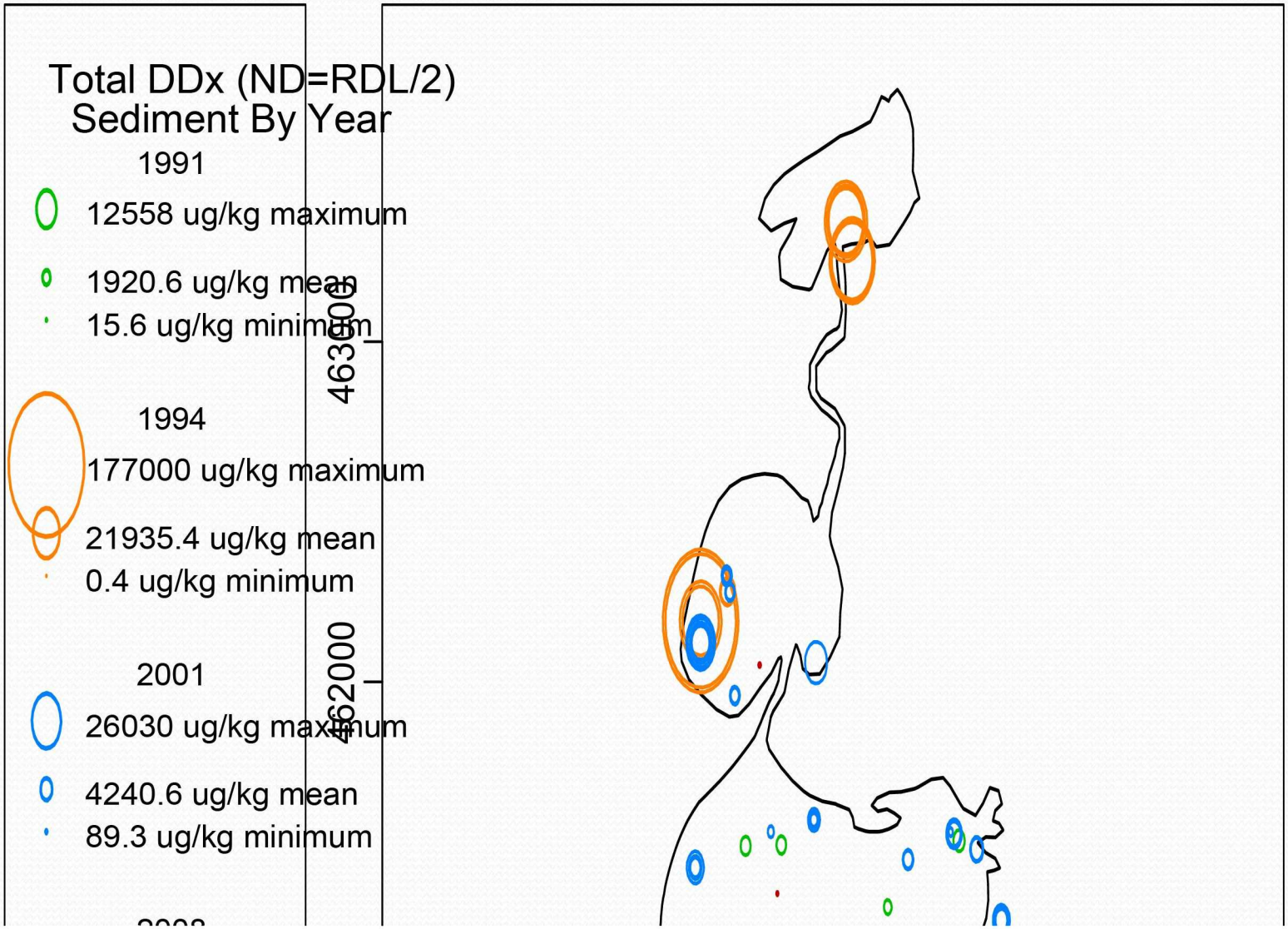
- Amphibian Data: EPA recommends the use of Bullfrog whole body data collected in 1994, which are the only amphibian data collected in Olin OU-2.
- Forage Fish: EPA recommends the use of Bluegill and silverside whole body data collected in 2008 only. This represents the most recent data collected from the OU-2 basin.
- Predatory Fish: EPA recommends the use of Bass, whole body data collected in 2008 only. This represents the most recent data collected from the OU-2 basin.

Mercury Data Use Specifications for Other Vertebrates

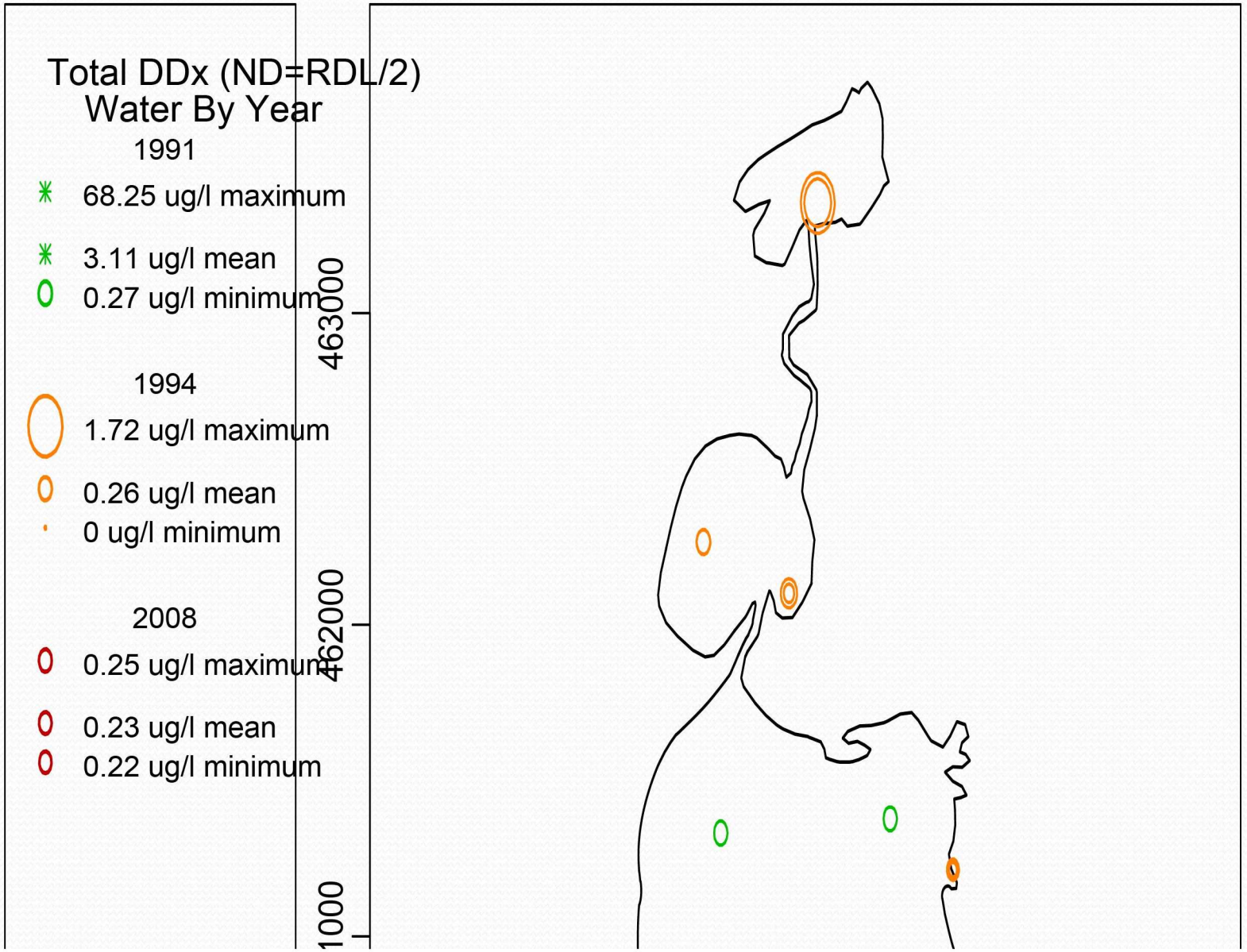
- Vertebrate Prey: EPA recommends the use of Little Blue Heron whole body data collected in 1994 for use as the "vertebrate prey" input to the mink food chain model, and Raccoon whole body data collected in 1994 for use as the "vertebrate prey" input in the raccoon model.
  - While EPA recognizes that it is less realistic to assume that raccoons are eating other raccoons, the raccoon whole body tissue is the only mammalian tissue available, and due to the omnivorous nature of raccoons, serves as a good surrogate for smaller mammals that the raccoon may be ingesting.

Data Use Specifications for DDTr

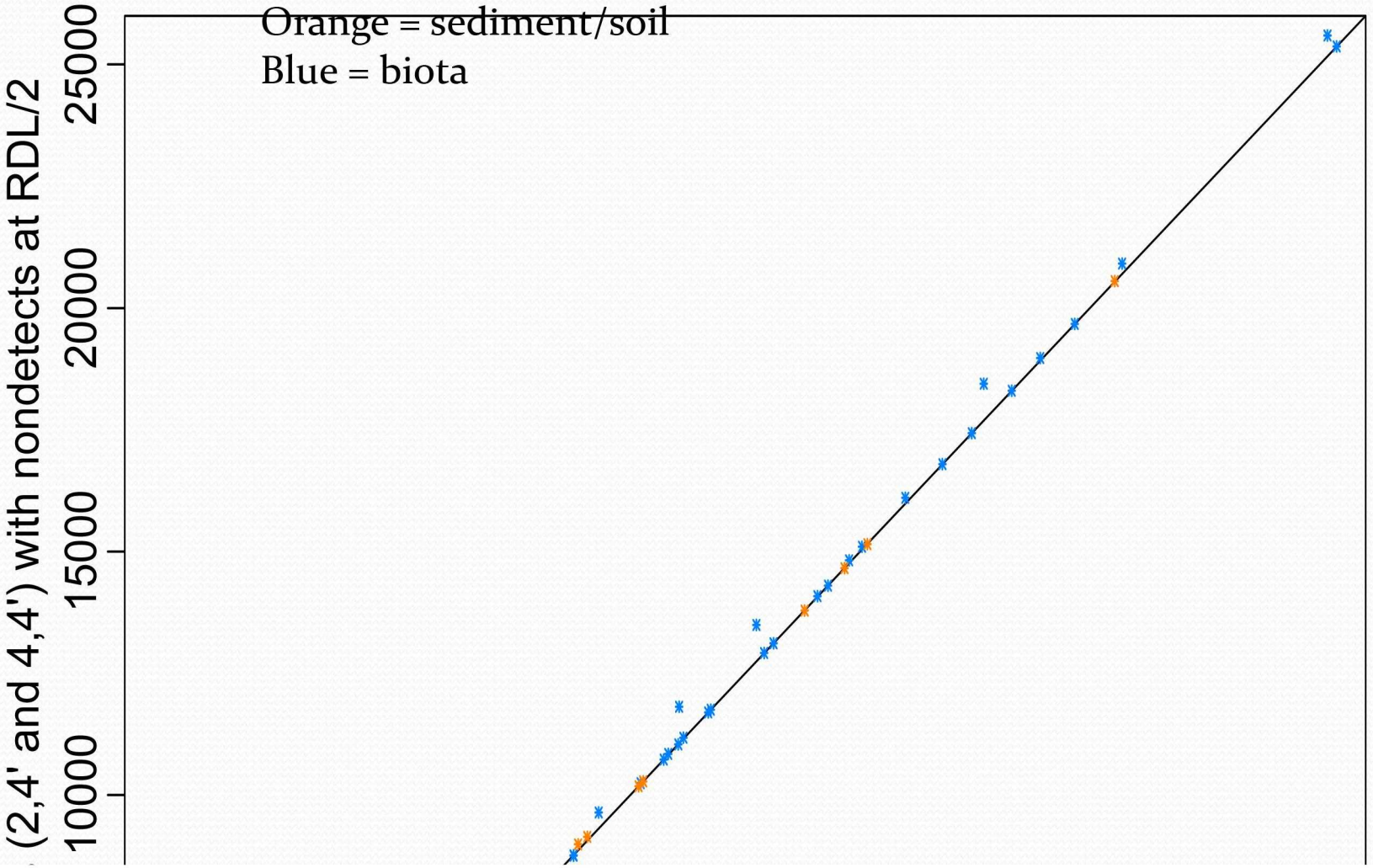
DDTr Concentrations in Sediment by Year



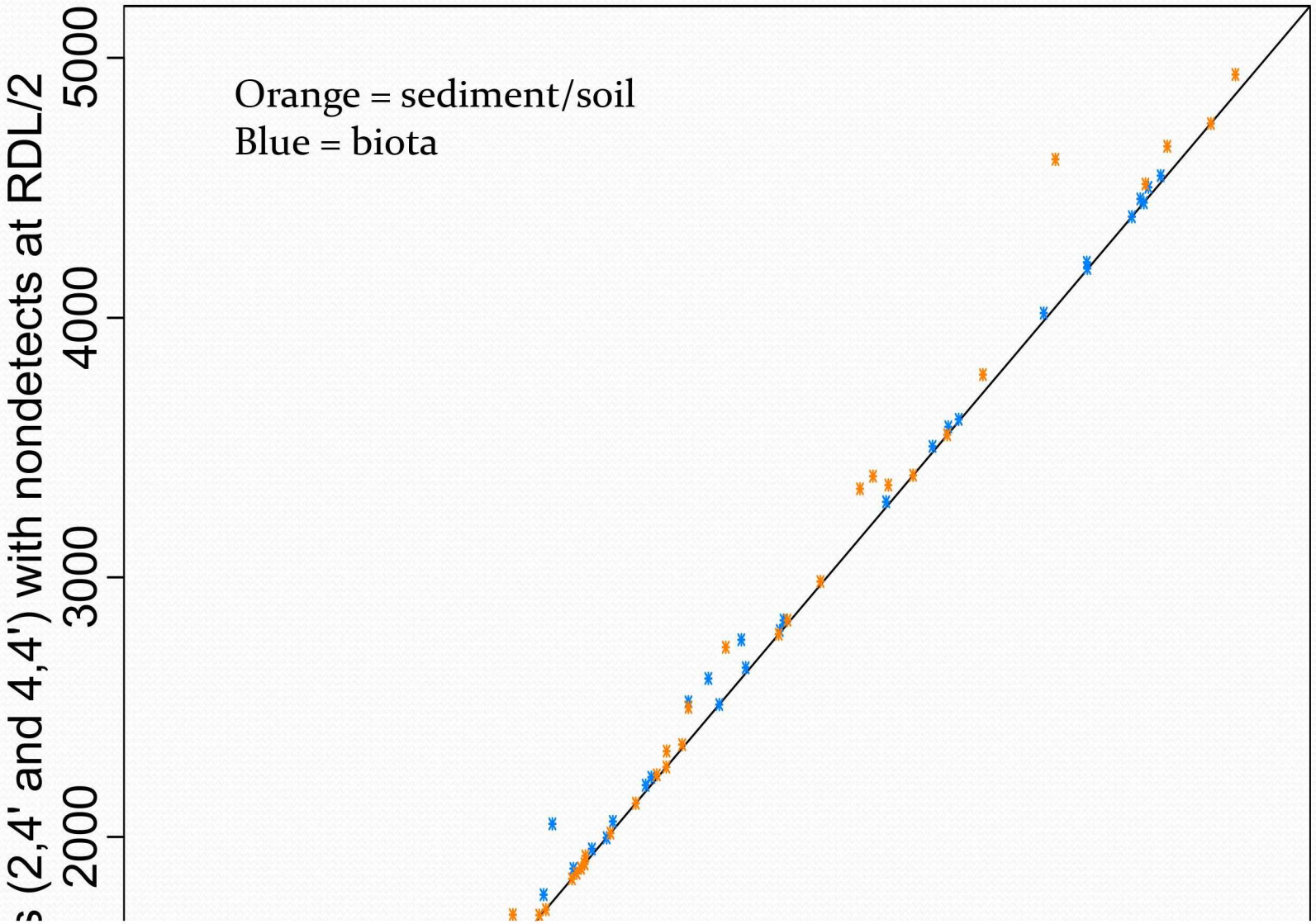
DDTr Concentrations in Surface Water by Year



Plot of DDTr With Nondetects = 0 vs Nondetects = RDL/2



Plot of DDTr With Nondetects = 0 vs Nondetects = RDL/2 (excerpt of lower 1/3 of range)



DDTr Data Use Specifications for Sediment and Surface Water

- Sediment: EPA recommends the use of Surface sediment data collected in 2001/2008/2009 combined (surface sediment collected in 2008/2009* is not spatially representative for calculating EPCs).
  - For calculation of BSAFs (to derive clean up goals in sediment), data from 2001 and 1994 will be needed, due to the lack of more recent data for DDTr in tissue.
- Surface Water: EPA recommends the use of Surface water data from 1991/1994 (most recent available for DDTr)

DDTr Data Use Specifications for Plants

- Terrestrial Plant Data: Wetland Soil Concentrations * literature derived Plant BAF.
- Aquatic Plant Data: Sediment Concentrations * literature derived Plant BAF.

DDTr Data Use Specifications for Invertebrates

- Terrestrial Invertebrate Data: EPA recommends the use of Terrestrial Insect data collected in 1994 and spider data collected in 1995/1996. These data represent the most recent data set available for terrestrial invertebrates in Olin OU-2.
- Aquatic Insect Data: EPA recommends the use of Aquatic Insect data collected in 1994 and 2001. These data represent the two most recent data sets available for terrestrial invertebrates in Olin OU-2.
- Crayfish: EPA recommends the use of Crayfish data collected in 1994, which are the only crustacean data collected in Olin OU-2.

DDTr Data Use Specifications for Amphibians and Fish

- Amphibian Data: EPA recommends the use of Bullfrog whole body data collected in 1994, which are the only amphibian data collected in Olin OU-2.
- Forage Fish: EPA recommends the use of Mosquito Fish, whole body composite data collected in 2001, which represent the most recent data sets available for DDTr in forage fish in Olin OU-2.
- Predatory Fish: EPA recommends the use of Bass, filet data collected in 2001 adjusted to whole body by multiplying filet data by 1.35 (conversion factor from Lecich, 1998). Though earlier whole body data are available for DDTr in bass, the 2001 filet data represent the most recent data for DDTr in bass tissues, and appear to show a decline in concentrations over earlier data.

DDTr Data Use Specifications for Other Vertebrates

- Vertebrate Prey: EPA recommends the use of Little Blue Heron whole body data collected in 1994 for use as the "vertebrate prey" input to the mink food chain model, and Raccoon whole body data collected in 1994 for use as the "vertebrate prey" input in the raccoon model.
  - While EPA recognizes that it is less realistic to assume that raccoons are eating other raccoons, the raccoon whole body tissue is the only mammalian tissue available, and due to the omnivorous nature of raccoons, serves as a good surrogate for smaller mammals that the raccoon may be ingesting.